DETAILED ACTION

Claim Objections

1. Claim 33 is objected to because of the following informalities: "a self cooling packaging" should be changed to "a self cooling package" to improve the grammar of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 34 recites the limitation "further dropping" in line 1. There is insufficient antecedent basis for this limitation in the claim, as one cannot further drop something which was not dropped in the first place.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 18-27 and 30-34 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Jeuch et al (US Patent Application Publication No. 2005/0160745) in view of Matsui et al (US Patent No. 7,296,593).

Regarding claim 18, Jeuch et al discloses a self cooling packaging (see title) comprising a cavity (20, see figure 3a) forming a heat exchanger and containing a refrigerant liquid and the vapor thereof (see paragraph [0036]); a cavity (30) forming an adsorption chamber for pumping of said vapor (see paragraph [0036]); a connection (42, 44) provided in a common wall (25) of said cavities (see paragraph [0036]), said

connection comprising a check valve (42, see abstract; see also paragraph [0039]); and an actuator (45, see paragraph [0041]) disposed on the side of the adsorption chamber cavity and adapted to push the check valve inside the heat exchanger cavity to an initial partly open position.

It is noted that Jeuch et al does not disclose the presence of a spring adapted to progressively push the check valve further inside the heat exchanger cavity from its initial partly open position to a fully open position.

Matsui et al discloses a valve which has a spring (69) which biases the valve open after manual activation of the valve (see column 10 lines 42-51).

As the valves of Matsui et al and Jeuch et al are both manually activated to permit fluid flow, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the spring mechanism of Matsui et al in the valve of Jeuch et al in order to ensure the proper degree of opening in the valve of Jeuch et al.

Regarding claim 19, the check valve of Jeuch et al is adapted to withstand pressure exerted on the side of the heat exchanger cavity, as otherwise the device would be nonfunctional. Further, the check valve of Jeuch et al can be opened inside said heat exchanger cavity under the effect of a force exerted by said actuator (see paragraph [0041]), and in the system of Jeuch et al and Matsui et al can therefore be opened under the effect of a force exerted by said actuator and said spring.

Regarding claim 20, the spring of Matsui et al is loaded by said actuator in the initial position, as otherwise it would not act on the valve to open it from the initial position.

It is noted that whether the spring is at rest or loaded when the connection is closed is not explicitly disclosed by Matsui et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention to manufacture the valve of Jeuch et al and Matsui et al such that when closed the spring was unloaded, as otherwise the spring would deform over time and become less effective.

Regarding claim 21, the spring of Matsui et al (69) is part of the actuator of Matsui et al (36, see figure 4).

Regarding claim 22, as the entire check valve is part of the connection, the spring is part of the connection between chambers in the system of Jeuch et al and Matsui et al.

Regarding claim 23, the actuator is a plunger rod (45, see figure 3).

Regarding claim 24, it is noted Matsui et al does not disclose the ratio between the spring stroke and the actuator plunger rod stroke.

As the appropriate spring stroke is a function of the desired force and the spring constant, it would have been obvious to one of ordinary skill in the art at the time of the invention to set the spring stroke to between .5 and .7 of the actuator plunger rod stroke in order to achieve the desired force while ensuring there was no unwanted loading of the spring while the connection was closed.

Regarding claim 25, the spring of Matsui et al is a helical spring (see figure 4).

Regarding claim 26, it is noted that Jeuch et al and Matsui et al are disclosed to use a coil spring, and not a spring with a tongue, to bias the valve.

It is old and well known in the art that different bias members may be used in valves. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use a spring with a tongue, instead of a helical spring, in the system of Jeuch et al and Matsui et al.

Regarding claim 27, the check valve of Jeuch et al has a plate disk shape (43, see figure 4).

Regarding claim 30, the connection comprises a sealing member (47) being compressed in a storage position in a direction perpendicular to the check valve direction (see figure 4; the gasket 47 is squished out).

Regarding claim 31, Jeuch et al further discloses a liquid/gas state separating device (51, 52) disposed in the heat exchanger cavity (see figure 7 and paragraph [0054]).

Regarding claim 32, the liquid/gas separating device defines a solid angle that includes the connection (see figure 7).

Regarding claim 33, Jeuch et al discloses a method for cooling the content of a self cooling package, said package comprising a cavity (20, see figure 3a) forming a heat exchanger and containing a refrigerant liquid and the vapor thereof (see paragraph [0036]); a cavity (30) forming an adsorption chamber for pumping of said vapor (see paragraph [0036]); a connection (42, 44) provided in a common wall (25) of said cavities (see paragraph [0036]), said connection comprising a check valve (42, see abstract; see also paragraph [0039]); and an actuator (45, see paragraph [0041]) disposed on the

side of the adsorption chamber cavity and adapted to push the check valve inside the heat exchanger cavity to an initial partly open position.

It is noted that Jeuch et al does not disclose the presence of a spring adapted to progressively push the check valve further inside the heat exchanger cavity from its initial partly open position to a fully open position.

Matsui et al discloses a valve which has a spring (69) which biases the valve open after manual activation of the valve (see column 10 lines 42-51).

As the valves of Matsui et al and Jeuch et al are both manually activated to permit fluid flow, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the spring mechanism of Matsui et al in the valve of Jeuch et al in order to ensure the proper degree and speed of opening in the valve of Jeuch et al.

Regarding claim 34, it is noted that the further entry of the check valve inside the heat exchanger cavity when the pressure therein has decreased to below a threshold value is not explicitly disclosed with words by Jeuch et al. It is, however, an implicit feature of the system of Jeuch et al, as a sufficiently low pressure in the heat exchanger cavity will suck the check valve of Jeuch into the cavity, with the threshold value for that change being dependent on area and weight of the check valve.

9. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeuch et al (US Patent Application Publication No. 2005/0160745) in view of Matsui et al (US Patent No. 7,296,593) and Keller (US Patent No. 5,072,862).

Regarding claim 28, it is noted that neither Jeuch et al nor Matsui et al discloses the check valve to be a conical check valve with a conically shaped valve seat formed in the common wall.

Keller explicitly discloses a conical check valve with a fixed conically shaped valve seat (35) and movable valve cone (31, see column 3 lines 54-56 and figure 3).

10. As Jeuch et al, Matsui et al, and Keller all disclose check valves, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a conic valve shape and valve seat shape in the system of Jeuch et al and Matsui et al in order to minimize the materials required for the check valve.

Regarding claim 29, the angle of the cone of Keller et al is between 15 and 30 degrees (see figure 3), and therefore the angle of the cone of the combined valve of Jeuch et al, Matsui et al, and Keller is between 15 and 30 degrees.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Veinotte et al (US Patent Application Publication No. 2004/0237637), Phung et al (US Patent Application Publication No. 2004/0215170), Oohashi et al (US Patent Application Publication No. 2003/016848), Szarka et al (US Patent Application Publication No. 2002/0148614), Wilkerson (US Patent No. 2,819,799), and Nakajima et al (US Patent Application Publication No. 2002/0083980) all disclose relevant valves with biasing mechanisms. Paine et al (US Patent No. 6,341,491), Aitchison et al (US Patent No. 5,214,933), Molzahn et al (US Patent No. 6,141,970), Molzahn et al (US Patent No. 6,103,280), Maier-Laxhuber et al (US Patent

No. 5,359,861), and Siegel (US Patent No.s 5,233,836 and 5,230,216) all disclose relevant self-cooling packages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXIS COX whose telephone number is (571)270-5530. The examiner can normally be reached on Monday through Thursday 10:00a.m. to 7:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann can be reached on 571-272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J J Swann/
Supervisory Patent Examiner, Art Unit 3785

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